朝比奈泰彦*: 地衣類雑記 (§191)

Yasuhiko ASAHINA*: Lichenologische Notizen (§ 191)

§ 191. Chemism of *Parmelia galbina* Ach. and related species.

Parmelia galbina Ach. Synop. Method. Lich., 195. 1814; Culberson, Amer. Journ. Bot., **48**: 168-174. 1961.

P. tiliacea, Fr. in Tuckerm., Lich. Amer. Septentr. exsic. no. 70.

P. sublaevigata (non Nyl.) Asahina, Journ. Jap. Bot. **26**: 290. 1951; Lich. of Japan, **2**: 97. 1952.

P. subtiliacea Zahlbr. (non Nyl.) in Bot. Mag. Tokyo **41**: 353. 1921.

var. **rugosa** (Hue) Asahina comb. nov.

P. subquercifolia Hue var. *rugosa* Hue, Nouv. Asch. Mus. ser. 4, **1**: 175. 1899.

P. sublaevigata Nyl. f. *rugosa* (Hue) Asahina, Journ. Jap. Bot. **26**: 291. 1951. cf. J. J. B., **5**: 286. 1928 et **6**: 243. 1929.

var. **subradiata** (Asahina) Asahina comb. nov.

P. sublaevigata Nyl. f. *subradiata* Asahina, Journ. Jap. Bot. **26**: 291. 1951.

Formerly all specimens of *Parmelia galbina* Ach. collected in Japan were called either *Parmelia subquercifolia* Hue or *Parmelia sublaevigata* Nyl. On the basis of Vega collection Nylander mentioned in his Lichenes Japoniae p. 27 *Parmelia sublaevigata* Nyl. In 1960 by the courtesy of Dr. Ahti (Helsinki) the author had an opportunity to examine the Vega specimen in question: 35116 *Parmelia sublaevigata* Nyl. Japonia, Rokkosan, E. Almquist. 1879. As this specimen is only a fragment (2.5×2.0 cm), it is difficult to know its natural habit. But the presence of soralia on the apical part of lobes excludes the identity either with *Parmelia galbina* Ach. or with real *Parmelia sublaevigata* Nyl. The original specimen of *P. sublaevigata* Nyl. was collected in Guiana (South America) and shows a different chemism. The author is of opinion that the Vega specimen no. 35116 is probably *Parmelia metarevoluta* Asahina (Journ. Japan. Bot. **35**: 97. 1960), which is proved to show the same chemism as *Parmelia galbina* Ach. Long since Hue gave a new name *P. subquercifolia* to Tuckermans exsic. no. 70 (sub *P. tiliacea* Fr.) and reported a variety *rugosa* Hue from Japan. At last in 1961 Culberson has shown the identity of *Parmelia galbina* from North America with the so called *Parmelia sublaevigata* auct. (non Nyl.) as well as

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P. subquercifolia Hue from Japan.

Chemism of *Parmelia galbina* Ach.: 20 g thalline fragments sent by Culberson were extracted 6 hours with ether at room temperature, the filtered etherial solution evaporated almost to dryness and the residue was dissolved in possibly small amount of warm benzene, filtered and laid aside. The separated substance was washed with warm benzene to remove a trace of contaminated atranorin and recrystallized from 50% aceton. This substance appears under microscope thin quadrate lamellae and is discolored between 160-220° and decomposes at about 260°. On account of shortage of material any analysis to determine molecular composition was not carried out. This substance, to which the name "galbinic acid" was given, seems to be a depsidone. It is also characterized by the following reactions and differentiated from salacinic as well as from norstictic acids:

	salacinic acid	norstictic acid	galbinic acid
K.	Under cover glass: blood red solution, giving gradually stout crossing prisms or curved thin trichites radiating from a center.	Blood red solution, giving slender, straight needles irregularly crossing with each other.	At first a yellow solution ensues and after standing over night irregular red spots under microscope are seen.
o.T.	Yellow thin fusiform plates.	Minute, yellow, thin quardrate plates.	Granular aggregates of minute yellow crystals.

By the thin layer chromatography the galbinic acid is well characterized. As the substratum slide glasses coated with "Kieselgel G nach Stahl" (Merck) was used. As a solvent it was found convenient to use mixtures of benzene, chloroform and glacial acetic acid. According to the different proportion of components Rf values vary to some extent, so that it is indispensable in each case to compare the spots with those of the standard substance applied on the same plate in parallel. For spraying agents to visualize the spots either dilute sulphuric acid or dilute PD solution is employed.

Example: As standard substance the purified galbinic acid obtained from *Parmelia galbina* Ach. from U. S. A. (s. above) was employed. Test materials

were prepared by extracting the lichen fragments to be tested first with hot benzene (to remove atranorin, zeorin etc.), then with hot acetone, which dissolves the expected depsidone. A trace of the acetone solution was applied at the starting point of chromatography.

I. Solvent. Benzene : Chloroform : Acetic acid (glacial)=3 : 3 : 0.3

a. Starting point of standard substance (galbinic acid).

b. Starting point of the acetone extract of *P. sublaevigata* (non Nyl.) Asahina.

II. Solvent. Benzene : Chloroform : Acetid acid (glacial)=3 : 3 : 0.5

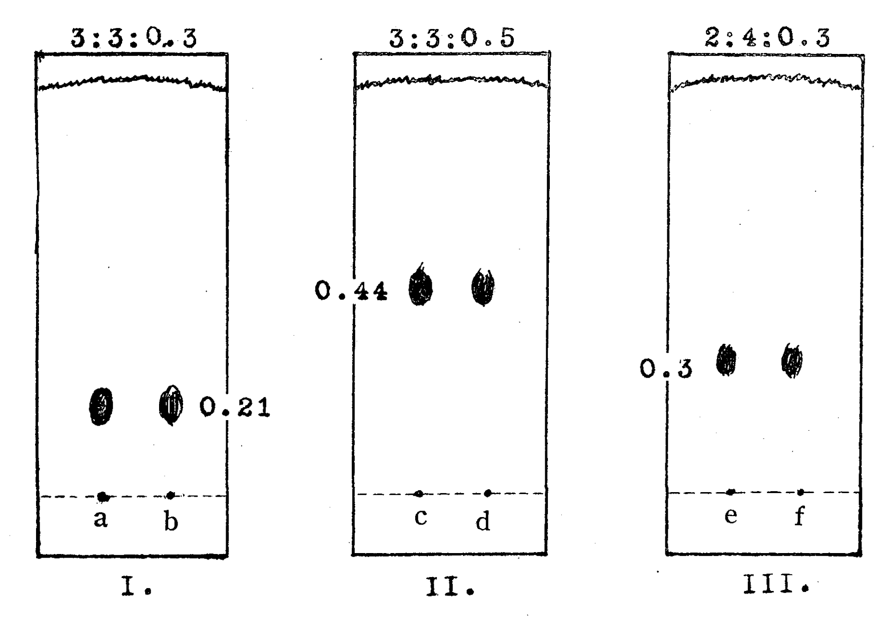
c. Starting point of standard substance (galbinic acid)

d. Starting point of the acetone extract of *P. metarevoluta* Asahina.

III. Solvent. Benzene : Chloroform : Acetic acid (glacial)=2: 4: 0.3

e. Starting point of standard substance (galbinic acid)

f. Starting point of the acetone extract of *P. obsessa* Ach.



In this way the presence of galbinic acid was proved not only in *Parmelia galbina* but also in *P. metarevoluta* Asahina and in *P. obsessa* Ach. (collected by Kurokawa in Virginia, U. S. A. no. 62049). The author highly appreciate

Miss M. Nuno's excellent assistance in finding effective solvents of the thin layer chromatography.

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日本産の *Parmelia* を検討していた初期の筆者は勿論 Nylander が同定した Vega コレクションの *Parmelia sublaevigata* Nyl. なるものは見ていなかった。然し諸種の文献殊に Nylander が Lichenes Japoniae, p. 27 に引用した Flora, 1885, p. 611 の末尾に......*P. tiliacea* Tuckerm. Exs. 70 est *P. sublaevigata* Nyl. とあるのをう呑にして以下 Tuckerman 標本 no. 70 と全く同一物で髄層中に所謂チョロギ形の菌絲の存在とアセトンエキスが o.T. で顆粒状の簇晶を生ずる標本をすべて *Parmelia sublaevigata* Nyl. と呼んだ。然し其の後 Culberson 君のペーパーが発表され，又 des Abbayes 教授から仏領ギアナ (type locality) 産の *P. sublaevigata* Nyl. の標本および Hale 君からタイプ標本と比較したというメキシコ産の *P. sublaevigata* Nyl. の標本を送られ，従来筆者が日本産の地衣で *Parmelia sublaevigata* と云ったものは *P. galbina* Ach. である事を確認した。 *P. galbina* から抽出された (欧文テキスト参照) o.T. で黄色の顆粒を生ずる物質はサラチン酸やノルスチクン酸などに近似のデプシドーンであるらしく便宜の為にこれをガルビン酸と呼ぶことにする。材料の不足から分子式は未決定であるがクロマトグラフィーで一定のスポットを生ずるので確認できる。近頃 Helsinki 博物館に保存してある Vega コレクションの中の *Parmelia sublaevigata* Nyl. と称するものを実見することができた。この標本は no. 35116 *Parmelia sublaevigata* Nyl. Japonia. Rokkosan — E. Almquist. 1879. と記入され 2.5×2 cm 位の断片であるが明かに裂片の先端に近く粉芽があり無粉芽であるべき *Parmelia galbina* Ach. とは異り恐らく *Parm. metarevoluta* Asahina (本誌 35 巻 87 頁 1960) であると思う。この *P. metarevoluta* にもガルビン酸があることは欧文テキストにある。なお同時に北米産の *Parmelia obsessa* Ach. もガルビン酸を含有する事が判明した。

□亘理俊次： **写真集** 第4巻，図版色刷 12 共 160，種数 88，解説 45 pp，写真 76. 1963. 第一法規出版会社，¥3,000 既刊3冊と同様に見事な写真集である。ナニワズの実，オニヒョウタンボク，ツチトリモチ，モッコクの実，ナンバンギセルなどの色刷図版など美しい。ホザキヤドリギ，ヒノキバヤドリギ，アサマヒゴタイ，オニヒョウタンボクなどの写真はなかなか珍らしい。ヒサカキ，オヤブジラミ，カラスウリ，シュロなどは見なれたものだが，さて，それらの細部にわたる観察は一般になをざりがちであるが，亘理氏が写真でとらえたものを見ると平素よく見ていないことがわかり，おかげで啓発されるところが少くない。レンズをこれだけ使いこなした氏の腕前もさることがら，またなみなみならぬ努力には感心させられる。(久内清孝)